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SECTION IV.—RIVERS AND FLOODS.

RIVERS AND FLOODS, MARCH, 1914.

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In the Mississippi watershed there was no time during March that a flood threatened, and at this writing, April 19, it seems probable that, barring the occurrence of torrential rains in the immediate future, the annual spring rise of 1914 in the Mississippi will not assume the importance of a flood.

A short period of high temperature that culminated on the 16th caused the ice-bound portion of the river, St. Paul to Davenport, to open on very moderate stages on that date. The last of the ice in Lake Pepin did not disappear, however, until about 30 days later. The river below Cairo fell slowly from the 1st to the 13th, and thereafter rose very slowly until the end of the month, when the gage on the Ohio at Cairo read 22.4 feet, 22.6 feet below the flood stage. Below Cairo the river was at moderate stages during the month.

Both the Missouri and the Ohio were also at moderate stages during the month.

Flood stages were reached in the Pedee and Waccamaw of South Carolina, the Pearl of Mississippi, and the Black Warrior of Alabama, due to heavy rains locally over the respective watersheds, but in no case was the flood destructive in character.

A second period of high temperatures about the end of the month, with rain on the 28th and again on the 30th, caused flood conditions to prevail in the rivers of New England and the northern portion of the Middle Atlantic States.

The Connecticut passed the flood stage at Hartford, 16 feet, on the 29th, and crested at 18 feet on the same day. The Hudson at Albany crested at 16 feet on the 29th, flood stage 12 feet. The Susquehanna passed the flood stage, 14 feet, at Binghamton on the 28th, and crested at 18.5 feet on the 29th.

The following crest stages were recorded on the Susquehanna at points below Binghamton: Towanda 20.2 feet on the 28th, flood stage 16 feet; Wilkes-Barre 28.3 feet on the 29th, flood stage 20 feet; Selinsgrove 16 feet on the 30th, flood stage 17 feet; Harrisburg 18.2 feet on the 29th, flood stage 17 feet. The above floods were accurately forecast by Weather Bureau officials in the respective districts.

MOUNTAIN SNOWFALL, MARCH, 1914.

California.—The snowfall during March was very light, but there is a large amount of well-packed snow in the higher mountains which has a water equivalent of from 40 to 50 per cent and insures an ample supply of water for the coming season.—*G. H. Willson, Local Forecaster.*

Oregon.—Owing to unseasonably high temperatures during the greater part of March the precipitation was in the form of rain, and but little snowfall was recorded below the higher altitudes, and, except at a few scattered stations in northeastern and southwestern counties, small amounts of snow were reported throughout the section

Compared with last year there was generally less snow in all districts, the only exceptions being at one station in the Siskiyou Range and at two in the Blue Mountains, where there were somewhat greater depths reported than at the close of March of the previous year.

Compared with the normal there is less snow than usual at this time of year, but that remaining is well packed.—*E. A. Beals, District Forecaster.*

Washington.—The snowfall for the month was much less than the average for March in nearly all localities. It was from 5 to 39 inches at stations on the western slope of the Cascades, from 1 to 47 inches on the eastern slope, and from 1 to 13 inches on the foothills and slopes bordering the Blue Mountains.

The first three weeks of the month averaged 5 or more degrees above the normal temperature for the time of year, and consequently the snow covering disappeared early on all but the higher slopes and summits, in timbered areas, in the gulches, and on cold northern slopes.

Such limited density tests as were made at moderate elevations show the water equivalent to be high.—*G. N. Salisbury, Section Director.*

Montana.—The month of March brought very little change in the snow conditions in the mountains. The snowfall for the month was below normal in most sections, and the mild temperatures that prevailed until about the 20th somewhat reduced the amount remaining from previous months. In the valleys and foothills the ground was generally bare at the end of the month, notwithstanding most of the month's snow fell during the last 10 days.

Owing to the absence of frost in the ground there was comparatively little surface runoff, the percentage of loss from this source being much smaller than in seasons of normal snow accumulation. The late flow of water which is of most importance in irrigation depends in large measure upon the water thus taken up by the soil over the entire surface of the watershed rather than upon the surface supply from melting snows in the high mountains. The effect of the deficiency in the snow accumulation will, therefore, probably be more noticeable in the flood stages of the late spring and early summer than in the later stages.—*R. F. Young, Section Director.*

Wyoming.—Reports from various sources show the average fall of snow for the State to be 7.4 inches, 4 inches below normal. The only watershed over which conditions have improved to a marked degree is that of the Tongue River, where a normal amount of snow covers the ground, promising an average flow of water for the summer. Depths of snow on the Powder River watershed increased appreciably during the month, but less than a normal flow of water may be expected. Accumulated depths on the watersheds of the North Platte, Green, and Snake Rivers promise sufficient water for the approaching season, but conditions on the headwaters of the Sweetwater, a tributary of the North Platte, are much less promising than at the close of February. Reports from the watersheds of the Big Horn, Cheyenne, and Yellowstone vary greatly, although it is thought that the flow of water will be little below normal, espe-